



**U.S. Department of Energy
Energy Efficiency
and Renewable Energy**

Bringing you a prosperous future where energy
is clean, abundant, reliable, and affordable

Federal Energy Management Program



UESC & PPA Overview

**for 2009 NASA Facilities Engineering & Real
Property Symposium**



Karen Thomas

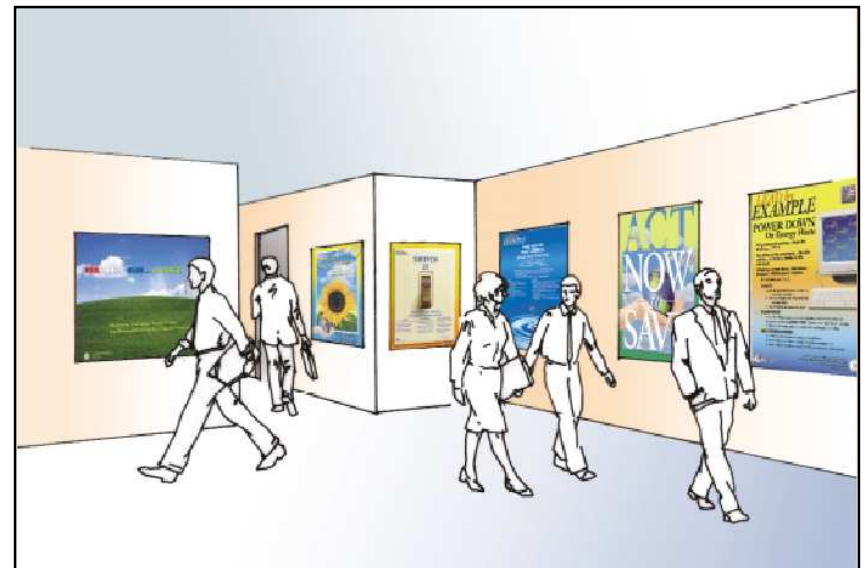
National Renewable Energy Laboratory

May 13, 2009





The Federal Energy Management Program (FEMP) facilitates the Federal Government's implementation of sound, cost-effective energy management and investment practices to enhance the nation's energy security and environmental stewardship.



Utility Energy Services Contracts

Basics





Definition: UESCs are contracts that allow utilities to provide their federal customer agencies with comprehensive energy and water efficiency improvements and demand reduction services

In a UESC –

- * the utility fronts the capital costs *
- * assess the opportunities *
- * designs & installs the project *
- * and is paid from the resulting savings *



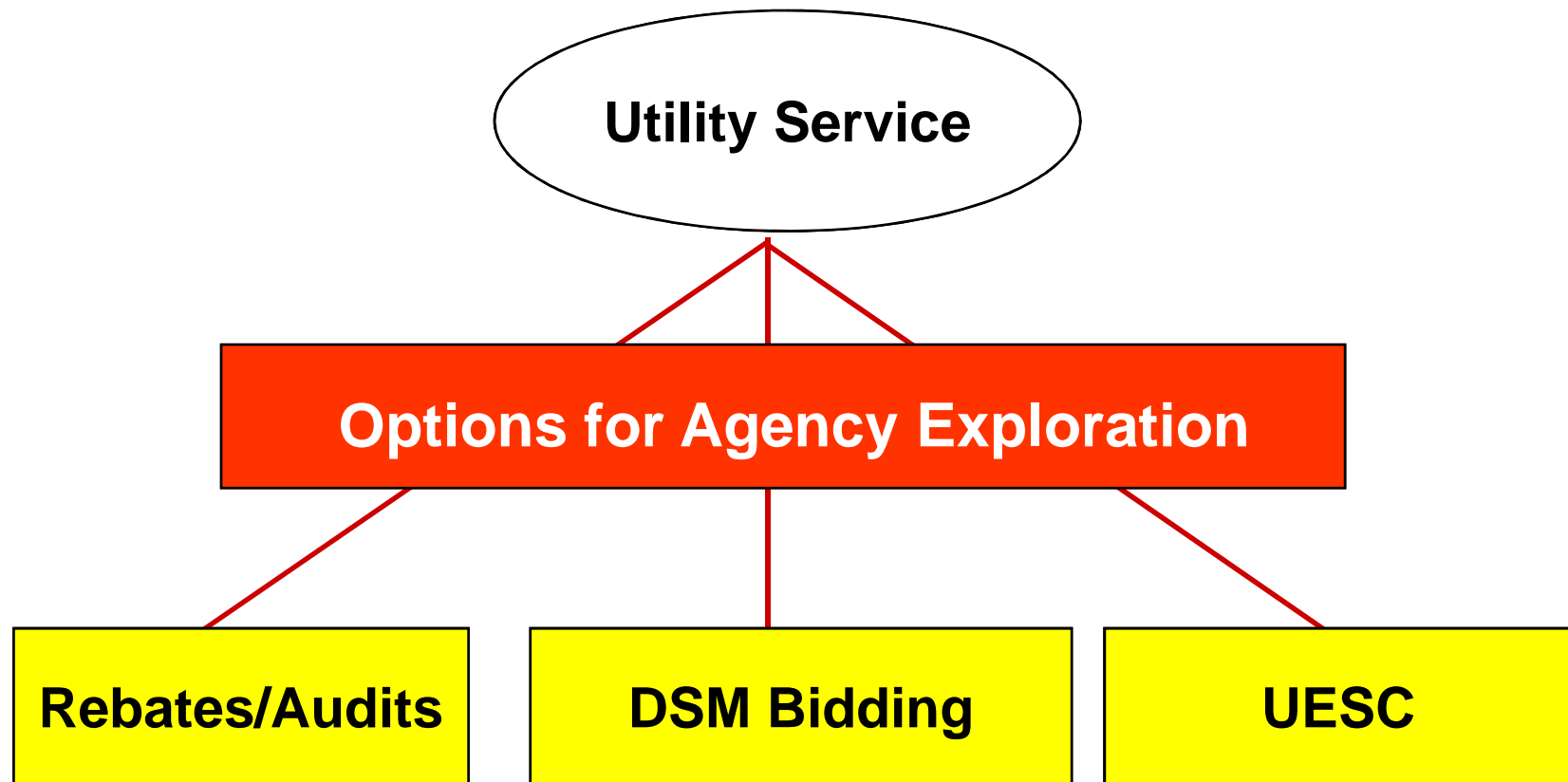
Utility Incentive Programs

Definition: Any service offered by a utility or developed in conjunction with an agency that assists customers in implementing energy and water conservation projects.





Utility Incentive Programs





Reasons to Choose UESCs

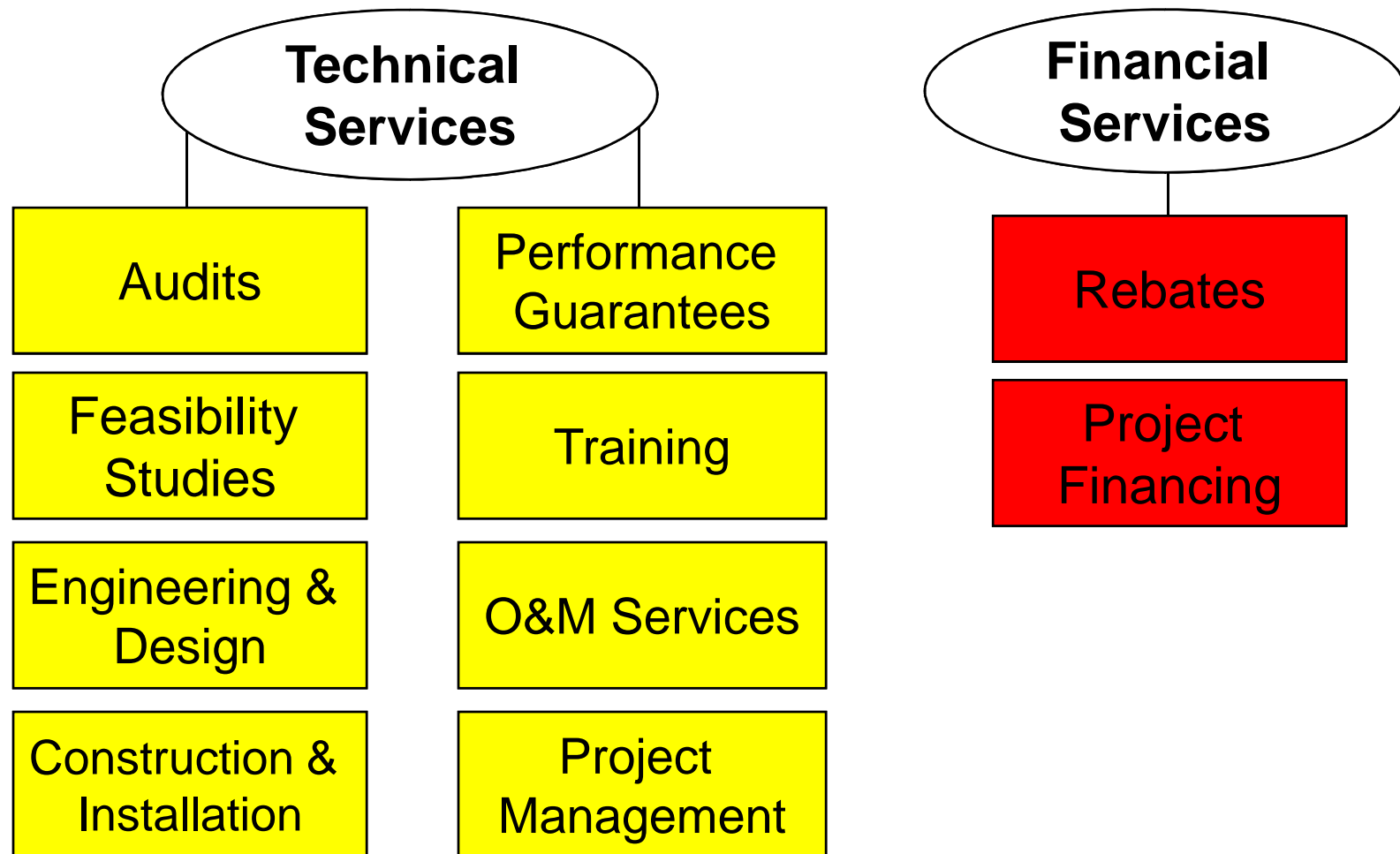
- ❖ You are using an existing, permanent authority.
- ❖ Minimal contracting effort for financed energy project.
- ❖ You work with a known entity
- ❖ Your utility has unique expertise and a knowledge of your facility
- ❖ It's an established source, seeking to maintain a long-term relationship
- ❖ Wide range of projects can be implemented
- ❖ Utilities obtain lowest financing rate
- ❖ One-Stop Shop (Turnkey projects):

One Stop Shop

- * Audit, study opportunity
- * Feasibility assessment
- * Detail design and engineering
- * Project implementation
- * Project commissioning
- * M&V (optional)
- * O&M (optional)



Typical UESC Offerings





Other Typical No Cost Utility Services

- ❖ Rebates/Incentives
- ❖ Rate analysis and load management assistance
- ❖ Technical assistance and/or design review
- ❖ Commissioning
- ❖ Electronic data transfer
- ❖ Metering Peak shaving
- ❖ Real time pricing
- ❖ Interruptible programs
- ❖ Renewable energy
- ❖ Power quality and reliability assistance
- ❖ Web access to utility account data



Definitions

❖ **Energy Efficiency Programs:**

1) *Public purpose* programs

- - administered by utilities, state agencies or other third parties
- - paid for by utility ratepayers (System Benefits Charge)

2) *Utility programs* administered by the local utility and paid for by utility ratepayers through their bundled rates

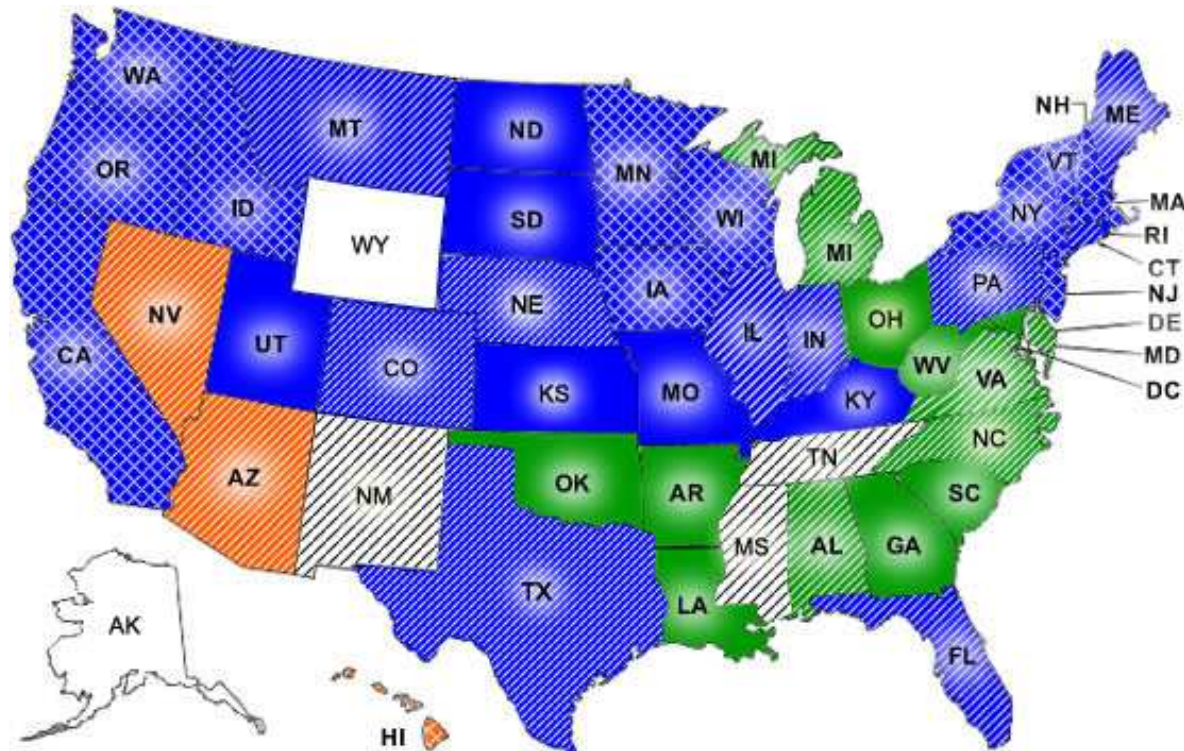
❖ **Demand Response Programs/Load Management:**

Programs which provide incentives to curtail demand and reduce load during peak periods in response to system reliability or market conditions.



Energy Efficiency Funds & Demand Response Programs

	Public purpose and/or utility energy efficiency programs and demand response/load management programs
	Demand response/load management programs
	Public purpose and/or utility energy efficiency programs
	Distributed energy resource options available
	Gas energy efficiency programs
	No energy management programs



http://www1.eere.energy.gov/femp/program/utility/utilityman_energymanage.html



Considerations

- ❖ UESCs may not be available to all facilities
- ❖ Utility may be new to this type of contracting
- ❖ Contract process is not rigid
- ❖ Agency's relationship with utility
- ❖ Contract term





UESC Data Collection Overview*

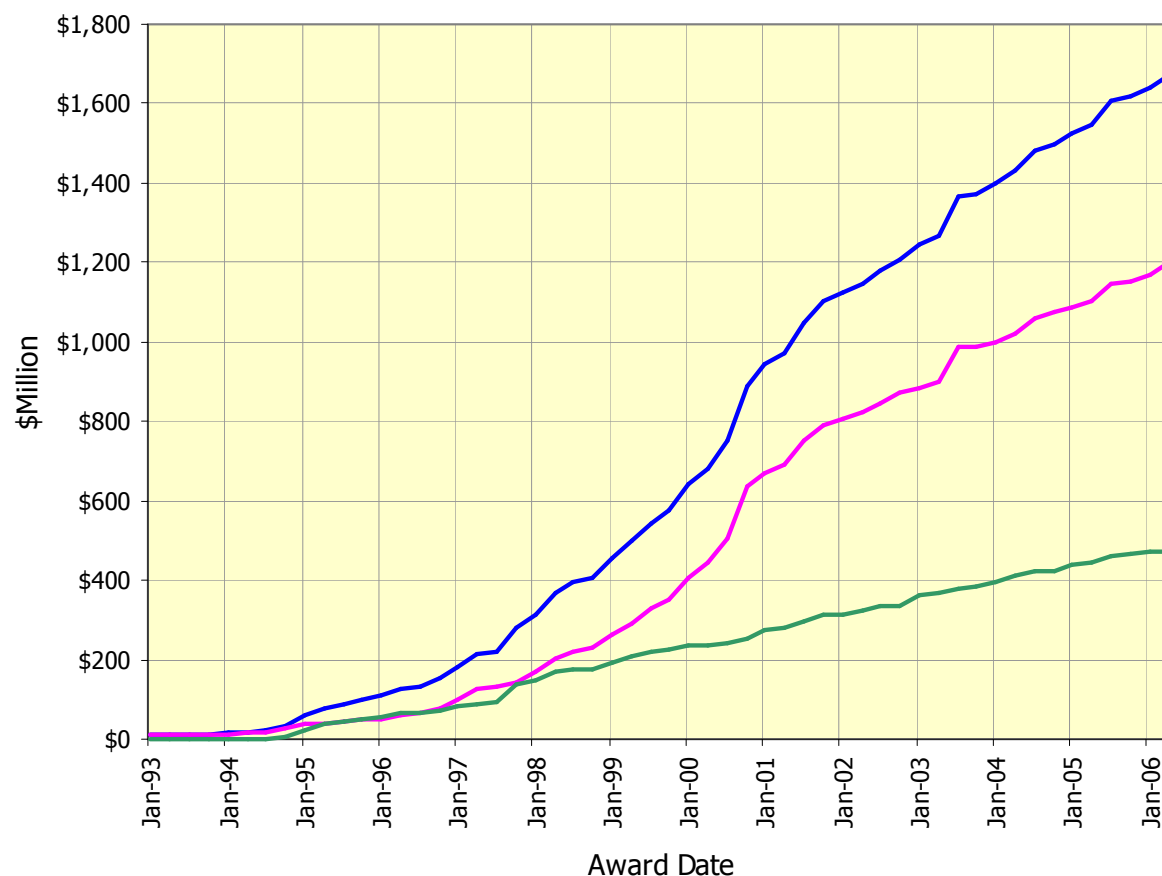
- ❖ Total Capital Investment for Awarded Projects between 1994 and August 2008: **\$2.0 Billion**
 - Fiscal Year 2005 Total: **\$117 Million**
 - Fiscal Year 2006 Total: **\$93 Million**
 - Fiscal Year 2007 Total: **\$72 Million**
- ❖ Based on voluntary reporting from utilities and agencies

** Data for this presentation was last edited on September 9, 2008 and is subject to change.
Data for 2007 and 2008 currently being updated; current sums may not fully reflect all UESC contracts.*



Rate of Investment

UESC Project Total Capital Investment
Rate of change over time



Electric Utility Industry Pledge (EEI)

Provide Federal customers w/ alternative financing & support services to implement at least \$2.0 billion in LCC-effective facility improvement projects to achieve 2010 EE & RE goals

— Total Capital Investment — Private Sector Investment — Federal Sector Investment

Notes:

Investment is based on projects' capital cost.

Data was last edited on 9/4/2007 and is subject to change.

http://www1.eere.energy.gov/femp/financing/uescs_industrycommit.html



The UESC Process

Educate
Acquisition
Team

Determine
Contract Vehicle

Utility Audit /
Initial Proposal

Feasibility
Study &
Agency Review
/ Estimate

Task Order for Audit

Develop Contract
/Establish Terms &
Conditions

Planning

Identification

Engineering &
Design
Package

Construction,
Installation,
and Proof of
Performance

Develop Contract
/Establish Terms &
Conditions

Final Contract

Implementation

Enabling Legislation for Utility Programs





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FEMP's UESC Enabling Documents

Details:

- ❖ Legislation and Executive actions
- ❖ Legal opinions
- ❖ Agency guidance

DRAFT



Utility Energy Services Contracts: Enabling Documents

2009 Interim Update: Final Draft

Prepared for the
U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
Federal Energy Management Program

March 2009
DOE/GO 102009 2688



U.S. DEPARTMENT OF
ENERGY
Energy Efficiency &
Renewable Energy

www.eere.energy.gov/femp/pdfs/28792.pdf



Section 152(f) - Utility Incentive Programs

Agencies:

- ❖ Are authorized and encouraged to participate in utility programs generally available to customers
- ❖ May accept utility financial incentives, goods, and services generally available to customers
- ❖ Are encouraged to enter into negotiations with utilities to design cost effective programs to address unique needs of facilities used by agency

(Codified as 42 USC 8256, P.L. 102-486)



48 CFR Part 41 Acquisition of Utility Services

- ❖ GSA authority to prescribe policies/methods governing the acquisition and supply of utility services for federal agencies & delegating authority to specific agencies to purchase utility services
- ❖ GSA authority to issue areawide contracts for utility services

Utility Service is defined as furnishing electricity, natural or manufactured gas, water, sewage, thermal energy, chilled water, steam, hot water, or high temperature hot water

http://www.eere.energy.gov/femp/financing_types.cfm



Energy savings contracts and activities

- ❖ Encourages participation in gas or electric utility programs for the management of energy demand or for energy conservation
- ❖ Accept financial incentives, goods and services generally available from the utility



Amendment to Section 10 USC 2866: Water Conservation Authority

- ❖ Water cost savings realized – One-half of the savings shall be used for water conservation activities as designated by DoD; One-half of the savings to be used at the installation at which the savings were realized



Energy Independence & Security Act of 2007 - Overview

Sec 513: Promoting Long-Term ESPCs and Verifying Savings

- ❖ Prohibits agencies from establishing a policy to limit ESPC, ***and all privately financed contract vehicles***, projects to less than the ***maximum 25 year term***
- ❖ Prohibits agencies from establishing policies to limit the size of individual projects

Sec 514: Permanent Reauthorization

- ❖ Deletes sunset provision, authorizes ESPC permanently



Emergency Economic Stabilization Act of 2008

Public Utility Taken Into Account

- ❖ Allows Public Utilities to use Investment Tax Credits (ITC) extended through December 31, 2016
 - Effective February 12, 2008
 - Applicable to:
 - Energy Efficiency –
 - Combined Heat & Power Systems
 - Solar Systems



Legal Opinions:

- ❖ DOE - Rebates - In the case of utility rebates, the rebates are essentially discounted prices for utility services and constitute refunds to the Federal Government. ***...rebates can be issued directly to DOE.***
- ❖ DOE – Relationship of the Anti-Deficiency to Multi-Year Contracts Under the Utility Incentive Program...
 - *no need to obligate total estimated cost of contract,* but ***only necessary to cover annual costs*** under the contract



Legal Opinions (continued):

- ❖ GSA - Authority for Extended Utility Agreements – authorized to enter contracts for terms ***greater than ten years***
- ❖ GSA - Exception From The Competition-In-Contracting Act's Full and Open Competition - Section 152's plain language contains an express authorization for an agency to participate in DSM contracts... This language appears to provide express ***authority for an agency*** to directly approach a utility concerning DSM services,... ***without the use of full and open competition***



Alternative Finance Guidance Memorandums

- ❖ AFGM 1 – Sole Source Justification
 - Ample justification exists for Federal agencies to enter into sole-source agreements with their ***franchised and/or serving utilities*** for any financial incentives, goods and services...

- ❖ AFGM 4 – Federal Fund Sources to be Used to Pay for Multi-Year Contracts Under the Utility Incentive Program
 - Clarifies that the choice of fund sources is not constrained by statute. Contracting Officers of each agency have discretion to ***use any funds deemed appropriate to pay for utility services***, to pay for Multi-Year Contracts under the Utility Incentive Program

Developed by FUPWG and approved by the
Interagency Energy Task Force



OMB Recommendations to Improve Alternative Financed Projects

- ❖ Encourage all agencies to utilize experienced Project Facilitators on their projects.
 - Explore all avenues to help agencies reduce the time from kickoff to an operating project.
- ❖ Reduce financing costs
 - Agencies to verify reasonableness of financing offer
 - Agencies to verify pricing is in line with direct-funded projects
- ❖ Streamline administration of follow-up services (M&V, O&M, R&R) during the performance period to ensure savings persistence.



FEMP Role In Project Assistance

Technical & procurement assistance for energy and water projects

- ❖ UESC Training –
 - [Webcasts](#): May 21, 2009;
 - [Workshop](#): after GovEnergy August 13 & 14, 2009
- ❖ Build partnerships
- ❖ Contracting expertise
- ❖ Technical review
- ❖ Process improvement



FDA White Oak Campus,
Silver Spring, MD



National Institutes of Health,
Bethesda, MD



The U. S. Department of Energy's Federal Energy Management Program (FEMP) has released two new web videos that feature successful examples of public-private partnerships for financing energy efficiency and renewable energy upgrades of Federal facilities. The videos focus on Super Energy Savings Performance Contracts (SuperESPCs) and Utility Energy Services Contracts (UESCs), two rapidly accelerating contracting mechanisms that allow the government to benefit from private sector investment in capital-intensive energy improvements at no cost to the taxpayer.

In one video, the U.S. Food and Drug Administration (FDA) has initiated an \$890 million GSA construction project at the site of its new headquarters—a 1940s-era Navy base in White Oak, Maryland. Using a wide range of energy efficiency measures and solar energy financed by private-sector dollars, it has led to one of the government's largest Super ESPC projects.

In another video, the National Institutes of Health (NIH) estimates that it has saved at least \$5 million annually in energy costs at its main campus in Bethesda, Maryland—the world's largest medical research facility. By drawing on resources offered by its local gas and electric utilities, the dollar savings allow more agency funds to be spent directly on medical research.

Each video is divided into six distinct modules that focus on different aspects of the alternative financing process, from contract planning and award negotiation to project implementation and measurement and verification of results.

The videos were produced for the Department of Energy by Greening America Productions. Limited copies are available on DVD by calling the EERE Information Center at 1-877-EERE-INE.



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Energy Efficiency and Renewable Energy

federal energy management program

Power Purchase Agreements



- Customer-Sited power purchase agreement (PPA) definition
-
- Key PPA issues
- Project process
- Project examples



Customer-Sited Power Purchase Agreement

- Private entity installs, owns, operates and maintains customer-sited (behind the meter) renewable equipment
- Site purchases electricity through power purchase agreement (PPA)
- Pros
 - RE developer eligible for tax incentives, accelerated depreciation
 - No agency up-front capital required
 - RE developer provides O&M
 - Minimal risk to government
 - Known long term electricity price for portion of site load
- Cons
 - Transaction costs
 - Limited federal sector experience



PPA and ESPC/UESC

- Energy Services Agreement (ESA) - PPA within an ESPC or UESC
 - ESPC benefit - 25 year contract authority
 - No signed contracts yet

- Another possible option – Utility Service Contract/PPA “hybrid”
 - Possible pilot project (currently stalled)
 - Payment tied to electricity production?
 - Use FAR 52.241-5 Contractor’s Facilities?



Key PPA Issues

■ PPA contract length

- Long term best – at least 10 years, preferably 20

• Possible Authorities

- ✓ FAR Part 41 – Utility Services (10 year authority)
 - ✓ GSA authority, delegated to certain agencies
- ✓ FAR Part 41 Program Guidance Instructions (PGI)*
- ✓ FAR Part 12 – Acquisition of Commercial Items (5 year authority)
- ✓ FAR Part 15 – Contracting by Negotiation
- ✓ DOD 2922A – 30-year authority, requires Secretary of Defense approval
- ✓ Congressional proposals for long term renewable contracting authority

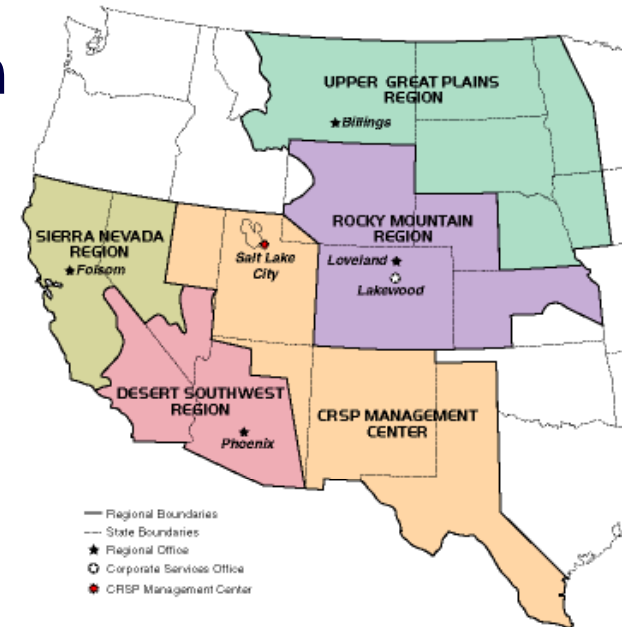
* Used for Nellis AFB indefinite term contract, with termination notice

http://farsite.hill.af.mil/reghtml/regs/far2afmcfars/fardfars/dfars/PGI%20241_2.htm#TopOfPage



Key PPA Issues

- **PPA contract length cont'd**
 - **Western Area Power Administration (Western) Option**
 - ✓ Long term contract authority - at least 20 years
 - ✓ Federal agencies in Western's service territory can use Western as the contracting agent
 - ❖ Bring renewable developer to Western (Western currently does not do RFPs)
 - ✓ Examples: NREL, Fort Carson
 - ✓ Nominal fee for Western's services





Key PPA Issues

- . Land use agreement – lease, easement, license, other*
 - Separate contract
 - Contract length limitations likely (agency authorities vary)
 - May include site access, environment, safety and/or security provisions
 - Long term land use agreement can help project viability if short term PPA contract length (ex. Nellis AFB)
 - Investigate options early

- . National Environmental Policy Act (NEPA) requirements
 - Crucial to investigate requirements early in process
 - Check state/local environmental requirements also
 - Stormwater management – EISA Section 438 and other local requirements

*Enhanced Use Lease (EUL) projects are typically focused on a real estate transaction with a revenue stream or other in-kind consideration - for large projects where project size > site load.



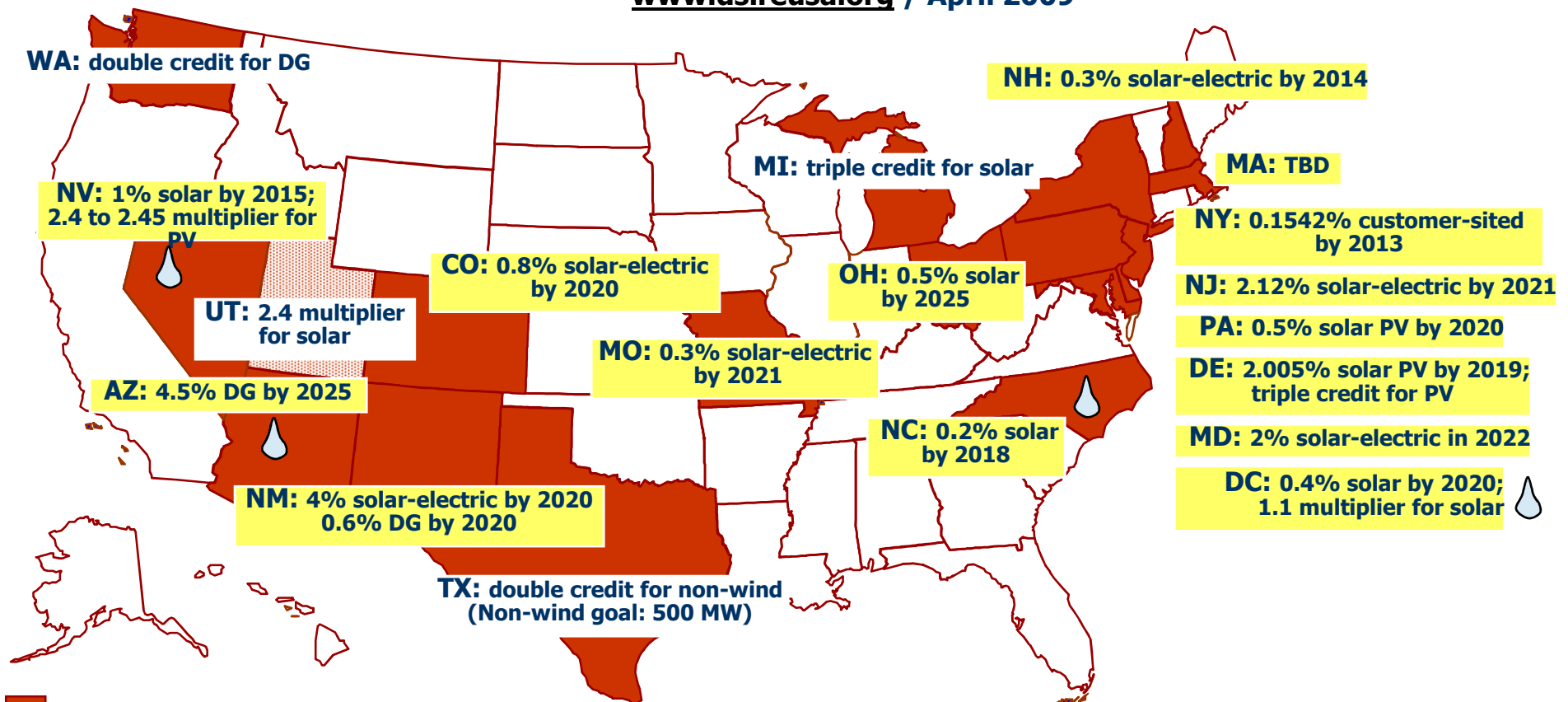
Key PPA Issues

- Incentives (see <http://www.dsireusa.org/>)
- Financial considerations important due to current economic conditions (ex. does developer/partner have a tax appetite?)
- Renewable energy certificate (REC) ownership
 - Ensure that PPA contract explicitly spells out REC ownership
 - Solar RECs may be very valuable
 - ✓ “REC swap” option for credit towards EPACT RE goal, with on-site double bonus (sell valuable RECs, purchase cheaper national RECs)
 - ✓ Federal Renewable Guidance
http://www1.eere.energy.gov/femp/pdfs/epact05_fedrenewenergyguid.pdf
- Public Utility Commission approval may be required for project, especially if there is a REC sale



RPS Policies with Solar/DG Provisions

www.dsireusa.org / April 2009



 State renewable portfolio standard with solar / distributed generation (DG) provision

 State renewable portfolio goal with solar / distributed generation provision



Solar water heating counts toward solar provision

**14 states &
DC**
have an RPS with
solar/DG provisions



Key PPA Issues

- PPA model – is it legal in the state/utility service territory?
- Utility rate impacts – possible tariff change, standby charges, etc.
- Interconnection/Net Metering
- Environment, Safety and Health Requirements
- Land, Infrastructure and Other Requirements
 - Solar land requirements vary depending on system type (fixed vs tracking)
 - Soil conditions (for ground-mounted PV systems)
 - Road, fence, etc
 - Metering
 - Fire protection (California has guidelines for PV)



Key PPA Issues

- Land, Infrastructure and Other Requirements
 - Roof information (for roof-top PV systems) – age of roof, roof replacement plans, warranty, etc.
 - How to deal with potential roof leaks
 - Electrical tie-in options and pertinent one-line and other electrical diagrams
 - Inverter location options
 - Any expected electrical upgrades required?
 - Is your site on a network feeder electrical system?



Key PPA Issues

- End of contract options
 - System removal & land restored to original condition
 - System “abandoned in place”
- Other potential options
 - System purchase – must be at fair market value (required for tax eligibility, to ensure contract is not considered a capital lease)
 - Contract extension/options - depends on contracting authority limitations, may be in the land use agreement rather than the PPA
 - Issue a new solicitation for a follow-on contract



Key PPA Issues

- Bid Evaluation
 - Evaluation Options
 - Low price, technically acceptable (LPTA)
 - Best value
 - Low price
 - Evaluation Team
 - Evaluation Criteria



Project Process - Phase 1

- **Form project team – *champion*, decision-maker, energy manager, facilities, contracting officer, attorney, renewable expert, budget, real estate, environmental, sustainability, safety, other**
- **Assess renewable options**
 - **Solar options include PV (ground mounted, roof-top, carport) and concentrated solar power, concentrated PV**
 - **Thermal projects such as biomass or solar hot water are possible PPA options (no examples yet)**
 - **Large projects best - private sector unlikely to be interested in small projects**

Note: FEMP assistance available throughout process



Project Process - Phase 1

- Renewable project initial cost effectiveness analysis to determine project viability
 - Applicable incentives (rebates, tax incentives, etc)
 - REC markets
 - Potential rate impacts and other pertinent utility policies (standby charges, tariff impacts, net metering)
- Select project option(s) - renewable type, project location(s), estimated size



Project Process - Phase 1

- **Investigate NEPA and other environmental requirements**
- **Explore land use agreement options**
 - **Environmental baseline study may be appropriate for end of contract decommissioning comparison**
 - **Land appraisal and/or legal survey**
- **Gather electrical drawings and other pertinent site information**



Project Process - Phase 2

- Choose contracting agency
 - Site or other agency contracting staff
 - Defense Energy Support Center (DESC)
 - Sites in western U.S. can utilize Western Area Power Administration as contracting agent. They negotiate & sign the PPA contract (once renewable developer is selected)
- Optional step - Request for Information (RFI)
- Develop Request for Proposal (RFP), “Opportunity Notice”, or other procurement document



Project Process - Phase 2

- Issue RFP and distribute widely
 - FedBizOpps
 - Green Power Network
(<http://apps3.eere.energy.gov/greenpower/financial/>)
 - Applicable renewable industry association
 - Other
- Site visit and pre-proposal meeting
- Evaluate bids, award contract
- Project construction
- Publicity (be careful what you say if RECs are not retained by the site)



Nellis AFB PV Project

- Approximately 15 MW on 140 acres including closed landfill
- PPA price – 2.2¢/kwh
 - Estimated \$1 million electricity savings/year, after standby charges
- FAR Part 41 utility service contract
 - Indefinite term with one year termination notice (using FAR Part 41 PGI)
- 20-year ground lease
- Ribbon cutting event December 2007
- RECs sold to Nevada Power (for state RPS solar set-aside)





NREL PV Project

- 720 kW (1200 MWh) single-axis tracking, ~ 5 acres
- 20 year PPA contract (utilizing Western)
- 20 year easement
- RECs sold to Xcel Energy for RPS solar set-aside (20 year contract)
- PPA price equal to or less than utility electricity prices (based on EIA projections)
- Operational December 2008
- Additional PV projects in progress





Fort Carson PV Project

- 2 MW, 3200 MWh in first year (~2% of Ft. Carson's load)
- Fixed, non-escalating energy rate
- 17 year contract, with 3 year option (utilizing Western)
- No cost lease (using 10 USC 2667 lease authority)
- **RECs sold to Xcel Energy (20 year contract)**
- **Ground-mounted, fixed system covering 12 acre former landfill**
- **First Solar thin film, 25 year warranty**
- **Came on-line December 2007**





GSA Sacramento PV Project

- .5 MW roof-top PV (thin film)
- 10-year contract
- Price matched to utility energy rate, with price floor
- Utility rebate and federal incentives (30% tax credit & accelerated depreciation) - pay for approximately 1/2 cost
- License for use of roof
- Renewable developer retains RECs
- Came on-line March 2008





Project Comparison

	Nellis	Fort Carson	NREL	GSA
Size	15 MW, 140 acres including closed landfill	2 MW, 12 acre former landfill	.72 MW, 5.4 acres	.5 MW
Type	Ground Mounted, Single Axis Tracking PV	Ground Mounted, Fixed PV	Ground Mounted, Single Axis Tracking PV	Roof-top PV
Contract Length	Indefinite with 1 year termination	17	20	10
Land Use Agreement	Lease	Lease	Easement	License
Procurement and Contracting Agent	Site	Site, in partnership with Western	Site, in partnership with Western	Site
RECs	Sold to utility	Sold to utility	Sold to utility	Retained by renewable developer



In Progress Project...

- ❖ DOE Princeton, New Jersey
 - RFP issued February 17
 - <https://www.desc.dla.mil/DCM/DCMPage.asp?pageid=589>
 - 10 year PPA contract, 10 year license



PPA Support

- ❖ Renewable **screening/assessments** to determine potential cost effective renewable projects
- ❖ Project Facilitation
 - Market research assistance
 - Applicable incentives and/or solar REC market
 - Possible utility tariff/competitive electric supply impacts, standby charges
 - Interconnection and net metering policies/requirements
 - RFI/RFP/Opportunity Notice
 - Assistance with other requirements such as land use agreement (lease, easement, license, other)
 - Bid evaluation



UESC

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Website

<http://www1.eere.energy.gov/femp/financing/uescs.html>

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FEMP Focus article (Fall 2007)

http://www1.eere.energy.gov/femp/newsevents/fempfocus_article.cfm/news_id=11218



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Thank You!